

### Amendments to the Claims

Please amend the claims as follows:

1. (Currently amended) A nucleic acid comprising a sequence coding for a fusion protein, the sequence comprising:

---[[F]] Hir---As<sub>m</sub>---R<sub>n</sub>---Y---

where

~~F comprises a nucleic acid sequence encoding~~ wherein Hir is hirudin,

As is a nucleic acid sequence comprising a codon,

m is an integer from 0-10,

R is an arginine codon,

n is 0 or 1, and

Y is a nucleic acid sequence coding for proinsulin and insulin.

2. (Currently amended) The nucleic acid of claim 1, wherein the nucleic acid comprises:

P---S---[[F]]---As<sub>m</sub>---R<sub>n</sub>---Y---T

where

P is a promoter,

S is a nucleic acid sequence coding for a signal sequence which increases yield,

T is an untranslated expression-enhancing DNA sequence, and

wherein [[F]] Hir, As<sub>m</sub>, R<sub>n</sub>, and Y are as defined in claim 1.

3. (Currently amended) The nucleic acid of claim 2, wherein S is the oprF gene from *Pseudomonas fluorescens*, the nucleic acid encoding the signal sequence of *Salmonella typhimurium* outer membrane protein (fim D), the nucleic acid sequence encoding the signal sequence of the *Escherichia coli* alkaline phosphatase precursor protein, the nucleic acid sequence encoding the signal sequence smompa ~~derived from~~ of the ompA gene for major outer membrane protein of *Serratia marcescens*, the nucleic acid sequence encoding the signal sequence ecoompC ~~derived from~~ of *Escherichia coli* ompC gene coding for major outer membrane protein, the nucleic acid sequence encoding the signal sequence af009352 ~~derived from~~ of *Bacillus subtilis* osmoprotectant binding protein precursor (opuCC), the nucleic acid

sequence encoding the signal sequence ~~acoxyna derived from~~ of *Aeromonas caviae* xynA gene for xylanase I precursor, or the nucleic acid sequence encoding the signal sequence ~~stomps1 derived from~~ of *Salmonella typhi* gene for outer membrane protein S1.

4. (Currently amended) The nucleic acid of claim 2, wherein the nucleic acid sequence ~~[[F]]~~ Hir encodes for lepirudin, Val-Val-hirudin, Ile-Thr-hirudin, Ser-hirudin or Ala-hirudin.

5. (Currently amended) The nucleic acid of claim 4, wherein nucleic acid sequence ~~[[F]]~~ Hir encodes for lepirudin, Ser-hirudin or Ala-hirudin ~~a hirudin which carries serine or alanine instead of leucine at position 1 of the amino acid sequence.~~

6-8. (Canceled)

9. (Original) A plasmid comprising the nucleic acid of claim 1.

10. (Original) A host cell comprising the plasmid of claim 9.

11. (Currently amended) A host cell comprising the nucleic acid of claim ~~[[1]]~~ 2.

12. (Original) The host cell of claim 10, wherein the host cell is selected from *Escherichia coli*, *Bacillus subtilis*, and *Streptomyces lividans*.

13. (Original) The host cell of claim 11, wherein the host cell is selected from *Escherichia coli*, *Bacillus subtilis*, and *Streptomyces lividans*, and wherein the nucleic acid is optionally integrated in the genome of the host cell.

14. (Previously Presented) A process for fermentative production of a fusion protein, comprising: fermenting the host cell of claim 11 in a fermentation medium resulting in a fermentation supernatant and isolating the fusion protein produced by the host cell of claim 11.

15. (Canceled)

16. (Previously Presented) The process of claim 14, wherein isolating the fusion protein comprises precipitating the fusion protein from the supernatant and concentrating the fusion protein by one of microfiltration, hydrophobic interaction chromatography, and ion exchange chromatography.

17. (Previously presented) The process of claim 14, wherein isolating the fusion protein comprises precipitating components of the fermentation medium or the supernatant, while the fusion protein remains in solution.

18. (Previously Presented) The process of claim 14, wherein after the fermentation, mercaptan or cysteine hydrochloride is added to the fermentation supernatant at pH about 6 to 9, resulting in a free SH group concentration of about 0.05 to 2.5 mM.

19. (Previously Presented) The process of claim 14, wherein: isolating the fusion protein comprises separating the fermentation supernatant from the host cell, and after separating the fermentation supernatant from the host cell, the host cell is repeatedly cultured in fresh medium to form additional supernatant from each culture, and fusion protein is isolated from each additional supernatant.

20. (Previously Presented) The process of claim 14, wherein: mercaptan or cysteine hydrochloride is added to the supernatant at pH about 6 to 9, so that the supernatant has a free SH group concentration of about 0.05 to 2.5 mM.

21. (Previously Presented) A process for the production of insulin, comprising:  
obtaining fusion protein by fermenting a host cell comprising the nucleic acid of claim 5 in a fermentation medium and isolating the fusion protein produced by the host cell,  
releasing insulin from the fusion protein by enzymatic or chemical cleavage; and  
isolating the insulin.

22. (Canceled)

23. (Original) The process of claim 14, wherein the host cell comprises a bacterium.

24-25. (Canceled)